

# **Enabling the Convergence of Communications and Medical Systems**

## **Session 6: How to Promote EMC**

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# How to Perceive EMC

## *Classical* Electromagnetic Compatibility

- Device centric view
  - Intentional radiators
  - Unintentional radiators
- Goal: eliminate EMI & EMD

## *Contemporary* Electromagnetic Compatibility

- System/network centric view
  - Intentional radiators
    - Same device/different uses
    - Different device/same uses
- Goal: Robust coexistence

# Electromagnetic Compatibility

- The concern is based on our experience that each device vendor has a deep understanding of their product but has a less than full understanding of all other devices which must coexist, and preferably cooperate, within a medical environment
- All vendors must evaluate their product's design-risk trade-offs within the fullest context of the "realm of possibility" (negative outcomes & positive design changes) and not based solely on existing conventional practice
  - *"every time I update a WLAN application, or add a new application, I get it to work but some other application that I didn't touch suddenly 'breaks' "*

# The Challenge

- define & adopt a WLAN Reference Architecture that fully encompasses the needs and coexistence of:
  - 1) medical device data communications
  - 2) enterprise data communications
  - 3) enterprise/clinical wireless VoIP communications
  - 4) guest Internet access
  - 5) otherwise legitimate spectrum users e.g. Bluetooth, 3G/4G-WiFi *sharing*, ZigBee, microwaves, etc.

# The Approach

- COTS based
  - Select the same subset of existing standards
- Deploy Multiple WLAN Resources
- Move new standards towards deterministic throughput allocation
- Make the hospital's *role in & authority to* manage spectrum utilization clear